

RESEARCH LABORATORY TECHNICAL REPORT

Gypsy Moth

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The gypsy moth (*Lymantria dispar* L.i) was introduced into the United States from Europe by a French scientist who attempted to cross breed this insect with the silkworm in an effort to provide a hardy silk producer. The gypsy moth escaped captivity near Boston, MA in 1869 and quickly became established in the Boston area. In an environment with few natural enemies, this insect gradually spread throughout the Northeast. Today, it is present from Maine to Northern Maryland and west through central Pennsylvania and New York. The gypsy moth is continuing its spread westward and southward. Gypsy moths feed on a wide variety of tree and shrub species. Favored food plants include oak, birch, apple and willow.

Figure 1: Fully-grown larva



Impact

Gypsy moths are voracious feeders. A fully-grown larva can consume as much as one square foot of foliage in a day. When infestations are heavy, entire trees may be defoliated in just a few days. Healthy deciduous trees can usually tolerate a single defoliation; however, the loss of foliage may reduce growth and vigor significantly. Two to three consecutive years of heavy defoliation will result in death of most hardwoods, especially oaks. Trees weakened by defoliation are very susceptible to invasion by “secondary” organisms such as insect borers and root decay fungi. These secondary organisms are often responsible for the ultimate death of the plant. Deciduous trees that have been defoliated usually produce a second crop of foliage within a few weeks. These leaves are smaller and sparser than normal which imparts a thinned appearance to the crown.

In addition to the detrimental effects of the gypsy moth on tree growth and survival, significant financial losses have been reported by commercial campgrounds, resort areas and picnic sites following heavy infestations. Homeowners also consider this pest an extreme nuisance.

Description

Gypsy moth larvae are approximately two inches long when fully grown. The body is brown to dark grey and hairy. The dorsal surface is marked with five pairs of blue and six pairs of red tubercles (raised spots) (Figure 1). Adult moths have stout bodies with a wingspan of approximately two inches. Females are off white with black markings on the wings and the abdomen is covered with yellowish hairs, while male moths are brown and slightly smaller (Figure 2). Egg masses are oval, approximately one inch long and covered with yellowish hairs from the female’s abdomen.

Figure 2: Male and female Gypsy Moth



Life Cycle

The gypsy moth overwinters in the egg stage. In late April through early May, eggs hatch and the larvae move to the foliage (Figure 3). First instar larvae spin down from the leaves on silk threads, and during windy periods they become airborne and are transported considerable distances. Larvae go through five or six instars before becoming fully-grown. Older larvae feed primarily at night and crawl down the tree during the day. By late June through early July, most larvae are fully grown and seek a secluded place to pupate. Adult moths emerge in mid-to-late-July. Female moths have wings but are incapable of flying while male moths are fairly strong flyers. The female secretes a pheromone (sex attractant), which draws the male for mating. Eggs are then laid in masses of 100-800. Eggs are most frequently laid on tree bark but also may be deposited on cars; campers, nursery stock, etc., which often results in long distance dispersal of the insect.

Figure 3: Gypsy moth larvae emerging



Population Fluctuations

Like many insect pests, gypsy moth populations fluctuate greatly. In most years throughout the Northeast, populations are present at very low, virtually undetectable levels. However, the insect has the potential to increase from insignificant numbers causing very light defoliation to massive numbers causing complete defoliation in just one year. Usually heavy outbreaks last two to three years before the population collapses. Reasons for the population fluctuations are poorly understood. Weather conditions, parasite and predator populations, natural diseases and availability of suitable food are among the principle factors that are believed to influence the population cycles.

Methods of forecasting gypsy moth outbreaks have been developed. Heavy defoliation can be expected when: at least 500 normal sized egg masses are present per acre, favored hosts predominate, and tree density is subnormal (open woodlands). Late spring frosts, and abnormally cool, wet weather in May and June will increase larval mortality, resulting in less defoliation.

Control

Gypsy moth is now a permanent resident of the Northeast and will never be completely eliminated. Several options are available to help minimize the spread of this pest and to help protect trees against serious defoliation. Ask your Bartlett Arborist Representative to share the various control options with you.



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